Contribution ID: **484** Type: **not specified**

P4.149 Electromagnetic and structural analysis of COMPASS Upgrade vacuum vessel during disruptions

Thursday, 20 September 2018 11:00 (2 hours)

COMPASS Upgrade tokamak is a medium-size high-magnetic-field device currently in the conceptual design phase [Panek et al. Fus. Eng. Des. 123 (2017) 11-16]. Due to the high plasma current (up to 2 MA) and the strong magnetic field (up to 5 T), large electromagnetic forces on conducting structures surrounding plasma are expected during disruptions. To address this issue, electromagnetic loads on the vacuum vessel during vertical displacement events, thermal and current quenches are calculated by means of ANSYS numerical simulations. The numerical results are compared with analytical estimates. The effects of in-vessel passive stabilizing plates and their electrical resistivity on the force distribution in the vacuum vessel are considered. Different access-port geometries and their influence on the vacuum vessel mechanical strength are analysed. The study reveals optimal choice of the vacuum vessel parameters which guarantee safe operation of the COMPASS Upgrade tokamak.

Presenter: YANOVSKIY, Vadim (Institute of Plasma Physics of the CAS)

Session Classification: P4